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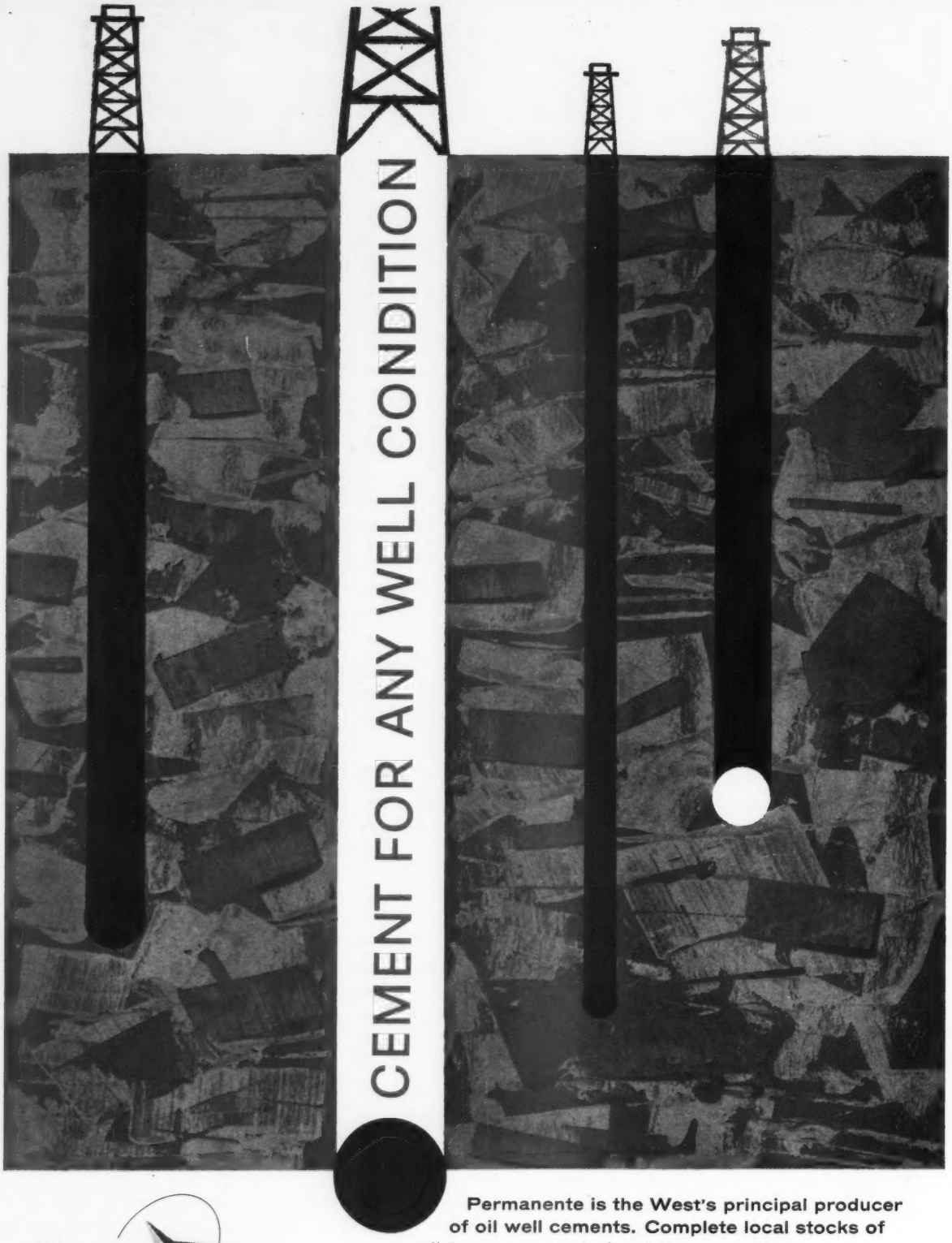
No. 23



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Union Oil Company of California Louisiana Plant "On Stream"

A unique $13,000,000 system of plants for processing southwest Louisiana natural gas into its valuable components for the petrochemical industry was put "on stream" near Baton Rouge Nov. 29, 1960.

The system, largest of its kind in the United States and first in Louisiana, is owned jointly by Union Oil Company of California and the Goliad Corporation.

Opening ceremonies, held at the Riverside Fractionation Plant on the east side of the Mississippi River about 26 miles south of Baton Rouge, were attended by the boards of directors and officers of Union Oil and Goliad, and by government officials.

As a source of raw materials, the Riverside plant is an important addition to the chemical empire developing around Baton Rouge and south to New Orleans.

It will produce such essential liquid products as ethane, a building block for polyethylene-type plastics; propane and butanes used by the expanding petrochemical industries and by homeowners as "bottled gas"; and natural gasoline for blending automotive and aviation fuels.

Actually, this plant capitalizes on a valuable state resource that was unavailable before.

A considerable portion of southwest Louisiana gas — including Union Oil's large volume — has heretofore been sent into interstate transmission pipelines to be sold as fuel, carrying with it a valuable cargo of liquids.

A gas processing system has been impractical for two reasons:

Louisiana gas is "lean": it has a very low liquid content. Hence a tremendous volume of gas must be processed to make such a system economically feasible.

The other deterrent is the location of the producing fields. The Atchafalaya Basin is a barrier separating them from the industrial markets of the state. Transmission pipelines swing around the Atchafalaya. Railroads and highways also avoid it. The expense of shipping products to market from the producing area would be prohibitive.

The volume of gas necessary for a plant has become a reality because of the dramatic increase in Union's natural gas production onshore and in the Gulf of Mexico.

In 1959 Union produced 105 billion cubic feet of gas, an increase of 14% over the previous year. Approximately three-quarters of this production came from Louisiana. In 1960 the company has been producing at a rate which will exceed 125 billion cubic feet for the year. Production is expected to increase to 175 billion in 1961.

An ingenious proposal by the Goliad Corporation cured the second problem: distance to markets.

In most processing systems, liquids are taken out of the gas and separated into usable products at the same location.

Goliad proposed dividing the functions by building two plants: one near the gas fields and the other near natural markets, then connecting the two by pipeline.

This is the pattern followed. As a result, a new value has been given to great volumes of gas produced along the Gulf.

The liquids are removed from the gas at an extraction plant on Cow Island, in Vermilion Parish. Approximately a half-billion cubic feet a day of natural gas from two major transmission pipelines are routed through the plant on their way out of state.

Then comes the ingenious device that makes the system practical: an 88-mile pipeline spanning the Atchafalaya Basin barrier. The raw liquids travel through the pipeline from Cow Island to the Riverside plant. Riverside, of course, is surrounded by one of the world's great petrochemical plant concentrations. It is also adjacent to river, rail and truck transportation.

Union and Goliad have also taken an option on 600 acres across the top of the Napoleonville salt dome. Future plans provide for underground storage within the dome to absorb seasonal variations in demand for propane and butanes. In addition, the underground reservoirs will serve as emergency storage for raw liquids from Cow Island.

Union Oil Company, founded in 1890, has been a Louisiana operator since 1939. From a standpoint of assets, it is the 15th largest company in the nation's oil industry, and 51st among all United States industrial corporations.

The company explores for oil and gas in the United States and eight foreign countries including Canada. Union products are sold throughout

the United States and in many other countries around the world.

Its primary operations are in North America. It has oil and gas production in nine states, including Alaska, and in Canada. Union's principal marketing activities are in the 12 western states. Its six refineries are in California, Washington and Montana.

In addition to its division headquarters at Houston, Union has production and exploration offices at Abbeville, Houma, Lafayette and New Orleans, La.

At the end of 1959 Union had natural gas reserves of 3½ trillion cubic feet, of which 2/3 are in its Gulf Division.

UOP Purchases Catalytic Combustion Corporation

David W. Harris, board chairman of Universal Oil Products Company, announced the purchase of Catalytic Combustion Corporation, Detroit, for UOP stock valued at approximately $500,000. Stock used for the transaction was previously purchased on the open market through cash generated by UOP operations, Mr. Harris pointed out.

Universal, with headquarters in Des Plaines, Ill., is a major petroleum and chemical research and process development company. Catalytic Combustion, with headquarters in Detroit, Mich., specializes in the manufacture and sale of catalytic oxidation equipment for industrial heating applications and for elimination of industrial sources of air pollution. In addition to its Detroit headquarters, Catalytic maintains its manufacturing facilities in Bloomer, Wis., and operates Kavag, a German subsidiary located near Frankfort. Richard J. Ruff and Norbert C. Ruff will remain as president and vice president, respectively, of Catalytic Combustion.

Universal has been working in one area of air pollution control through development of its Purzaust muffler, a catalytic device to eliminate smog-causing ingredients from auto exhausts. The Purzaust muffler is now awaiting tests by the California Motor Vehicle Pollution Control Board.

"Purchase of Catalytic Combustion Corp. is another step in UOP's planned program to diversify into fields related to its research, development and process licensing activity," said M. P. Venema, president.

Donald E. Graham

Petroleum Industry Presents Divergent Prospects

Domestic oils: prosperity returns. International oils: problems multiply. This sums up The Value Line Investment Survey's view of the petroleum industry.

The domestic integrated oil companies are out of the woods, the Value Line Survey states. A rapid rise in refined product prices between June and September restored the refiners' spread to the best level since early 1959. Third quarter reports mirrored the improved marketing climate within the United States. The domestic refiners should enjoy wider margins and rising earnings in the months ahead. Their earnings comparisons are expected to remain favorable through mid-1961.

International oil companies will find the going rougher, the Value Line Survey continues. While their U. S. earnings will benefit from the improved climate for domestic refiners, their foreign earnings are expected to decline. Excess supplies of crude are competing for world markets, driving prices down. The governments of the leading producing states are stoutly resisting any drop in their income from oil. The traditional 50-50% formula for sharing profits with producing nations is about to be scrapped—in effect, if not in name.

Smith Industries International Formed

Smith Tool Co., one of the world's leading manufacturers of jet rock bits for the drilling industry, has recently been made a division of the newly created Smith Industries International, Inc. A management policy of diversification and expansion led to the formation of Smith Industries, with Donald E. Graham as president and Robert L. Flynne as vice president—finance. H. C. Smith, founder of the original H. C. Smith Oil Tool Co., is chairman of the board.

Smith Tool Co. was originally established in 1936 as the H. C. Smith Oil Tool Co. and acquired its present name in 1959 when company stock was placed on the open market. As a division of Smith Industries, Smith Tool Co. is now headed by Kenneth H. Swart, president, and Arthur S. Marshall, vice president—sales. Other divisions of Smith Industries include Smith Dynamics, Bufnel Co., Smith Forge Co., and Barrenas de Mexico.

The organizational mission of the various divisions illustrates the wide diversification being achieved by Smith Industries. Barrenas de Mexico, located in Mexico City, is a division organized to serve the petroleum industry of Latin America with Smith jet rock bits. Smith Forge Co., in addition to performing forge service for the other divisions of the organization, will also make its services available to outside industries. The Bufnel Co. of Santa Fe Springs, California, manufactures steel gratings, metal floors, and allied products. Smith Dynamics, headed by William A. Wilson, president, occupies the former Web Wilson facilities in Compton, California, and specializes in the manufacture of electro-mechanical equipment and devices used by the aircraft and missile industries for both airborne and ground-support applications.

It is anticipated that Bufnel Co. may be moved at some time in the future from Santa Fe Springs to the central Smith Industries complex in southern Los Angeles, California.

According to Donald E. Graham, president of Smith Industries, the organization will pursue a continuing program of diversification and expansion, both of activities and personnel.

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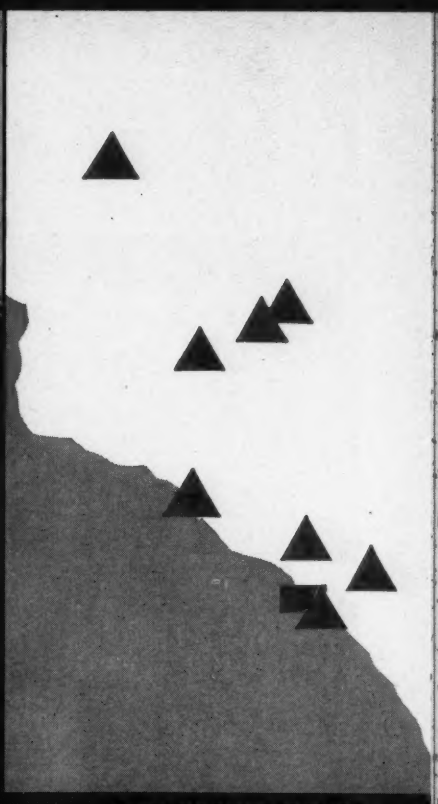

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Baker Oil Tools' new Bakersfield branch located at 5425 Rosedale Highway.

Baker Oil Tools Moves Bakersfield Branch

Baker Oil Tools, Inc., has moved its Bakersfield branch headquarters into a new warehouse and office building located at 5425 Rosedale Highway. This new building, containing approximately 2,560 square feet of warehouse and service area and 640 square feet of office space, will serve not only as the Bakersfield branch warehouse but also as the headquarters for Baker's Northern California District Manager, R. B. "Cocky" McCannon.

Baker has maintained a sales and service branch in the Bakersfield area for nearly thirty years, and the new facilities have been designed as a continuation of this long-standing company policy of providing the proper equipment when and where it is needed.

Research by Petroleum Industry

The petroleum industry spends more than $300 million a year in research into the qualities of oil, the American Petroleum Institute was told recently.

Three speakers outlined the goals and policies of oil research at the 40th annual meeting of the API in Chicago, Nov. 15. They were Cary R. Wagner of Washington, D.C., chairman of the Petroleum Research Fund advisory board of the American Chemical Society; Monroe E. Spaght of New York, president of Shell Oil Co.; and Alan T. Waterman of Washington, D.C., director of the National Science Foundation.

Spaght said the individual U. S. oil companies themselves spend approximately $300 million a year on various types of research. He said the American Petroleum Institute spends about $800,000 on fundamental research.

Wagner said the Petroleum Research Fund this year is spending $2,881,015 on 334 fundamental research projects and has spent $6,427,520 since it started payments six years ago.

Wagner said the Fund consists of more than $70 million in assets obtained from the sale of the trust-held Universal Oil Products Co. and now invested to produce about $2,500,000 a year for petroleum research.

"It is obviously too early to say," Wagner said, "just what the impact of the operations of the Petroleum Research Fund will be upon the petroleum industry. That it will be important goes without saying. Results are freely offered to the public."

Waterman said the federal government now is spending about $750 million on basic research.

U. S. Supreme Court Upholds State Ruling in Gas Sales

The United States Supreme Court agreed to "let stand" a California Supreme Court ruling that direct pipeline gas sales by a producer to a single industrial customer are exempt from state regulation.

The State Supreme Court on July 1, 1960, handed down a unanimous decision voiding a finding of the California Public Utilities Commission that Richfield Oil Corp. was a public utility subject to its jurisdiction. The State Court action also annulled subsequent orders of the PUC which had ordered Richfield to cease and desist from delivering and selling gas to Southern California Edison Co. and to cease and desist from operating and maintaining its gas pipeline used for that purpose.

The U. S. Supreme Court, by its refusal to consider an appeal filed by Southern Counties Gas Co., sustained the State Court's decision, which found that the acts of Richfield in selling gas to Edison and building and operating the pipeline for that purpose could not be construed as those of a public utility in view of the long history of judicial holdings in California surrounding the definition of a public utility.

First Ashless Detergent Single-Grade Motor Oil

Commercialization of an entirely new type of motor oil will take place this month when Standard Oil Company of California, W. O. Inc., introduces "RPM Special Motor Oil." This development by Cal Research culminates many years of effort by the petroleum industry to combine in single-grade oils the effective control of sludge and wear in stop-and-go driving with the reduction in knocking made possible by ashless detergents.

The key to this important development lies in a new patented polymeric additive with active chemical groups which suspend the products of partial fuel combustion and prevent them from depositing. This same additive prevents corrosion and wear, and also, being ashless, does not contribute to combustion chamber deposits.

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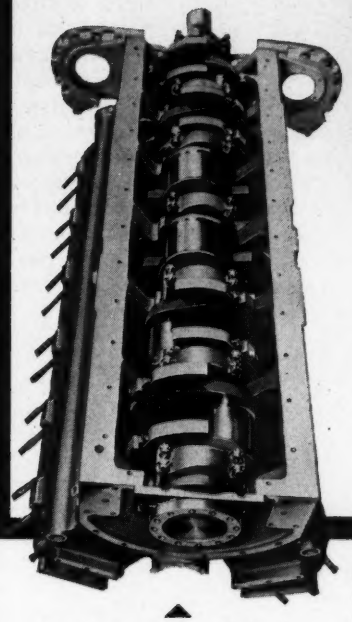
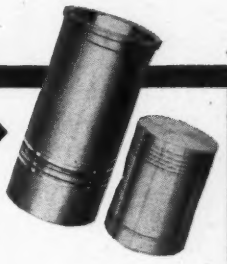
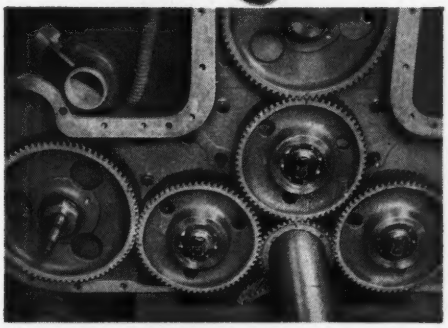


Crankshaft and main bearings in place in a typical Waukesha V-12 oil field engine. Note heavy flanges, thick bearing webs, rugged long-life construction.

Precision-built and balanced rod assemblies, matched with pistons. Pressure oiled, mirror smooth, heavy pins. Replaceable bearing shells.

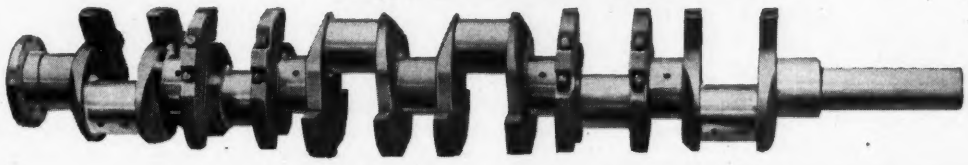


Removable wet cylinder sleeves of close-grained alloy iron, finished for oil retention and long life. Heavy duty, aluminum alloy, oil-cooled pistons.



Wide-faced helical cut timing gears are flood oiled. Materials selected for long, quiet life and accuracy. Gears and all elements in the power train, from pistons to flywheel, are precision-machined in Waukesha shops under Waukesha Quality Control.

Rifle-drilled, drop-forged, heat-treated crankshafts, precision-ground to exacting Quality Control standards. Note extra large bearing areas. Statically and dynamically balanced.



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Petroleum LORE and LINGO

By RICHARD SNEDDON

First Pipe Line

The oil industry was just 6 years old when Samuel Van Syckel, the son of a New Jersey farmer, completed the first successful long-distance transportation by pipeline. That, of course, was in Pennsylvania and was by all means an epochal event in petroleum history. Prior to that time teamsters had been charging $4.00 a barrel to haul crude oil a distance of 5 miles, over roads that had been converted into veritable quagmires by repeated rains and heavy traffic. It is said that thousands of teams thrashed back and forth over the oilfield roads until they became almost impassable. By the new pipeline system the transportation cost was reduced to $1.00 a barrel for the same distance and the teamsters were so riled over this threat to their existence they cut the line in several places and on several occasions, and showed in other ways their distinct displeasure with this invasion of progress.

Teamsters Overruled

However, despite the ire of the teamsters and the fact that the 2-inch line was parted once or twice by the inadvertent "closing of a stop-cock," it was eventually completed and operated with signal success. It was reported that by the use of three pumps the system could deliver at the rate of 80 barrels an hour and unlike the teams "was able to work all night." Incidentally, like our early California lines, it was paralleled with a telephone system so that communication could be maintained between terminals and intermediate pump stations. Now every field operator of account, whether pipeline or production, has a car equipped with short-wave radio and can carry on a two-way conversation wherever he may be, immediately upon call.

Something of Transportation Rates

Some indication of advancement in technique is to be found in transportation rates. From $4.00 a barrel by team to $1.00 a barrel by pipeline is certainly a major reduction in cost. But it is hardly to be compared with the efficiency and economy of present-day pipeline transportation. Some pipeline companies are now able to move a barrel of oil a thousand miles for approximately 35 cents, and please note that this remarkable reduction has taken place while every other kind of transportation cost has been mounting at a frightening pace. It should also be remarked that it has been achieved in the face of pyramiding equipment and labor costs that make the feat seem even more outstanding. Let me quote the estimated investment in a completed well about the time the Van Syckel pipeline was constructed:

Engine and boiler, 15 H.P. delivered	$2,500
Rig and cable	750
One tank, 500 bbl.	350
Drilling tools, tubing, etc.	1,000
Labor, fuel, and extras	2,500
Incidentals	500
Total	$7,600

In these forward days that much money would hardly cover the drilling of a post hole! But, going back briefly to a comparison rate, perhaps the relationship between old and new can be more strikingly illustrated if they are quoted on a common basis:

	Cost per bbl/mile	Cost per 1000 bbl/miles
Teamsters	80 cents	$800
Van Syckel p/l	20 cents	200
Modern p/l	035 cents	35 cents

Light Oils Are Flighty

Crude petroleums, particularly the higher API gravity ones, are freighted with volatile constituents that fly off into space whenever they are subjected to the proper conditions. Excepting in completely closed containers, a rise in temperature, a drop in pressure, or any form of agitation may drive enough vagrant hydrocarbons from the liquid to affect its refining value and even its price. Because of the inherent waywardness of its No. 1 raw material, the entire system of oil operation from production to refining and ultimate commodity storage is contrived in such a manner as to hold evaporation losses to the lowest possible minimum. Every oil company of any dimension has an oil and gas conservation department or at the least a conservation engineer.

Conservation Art

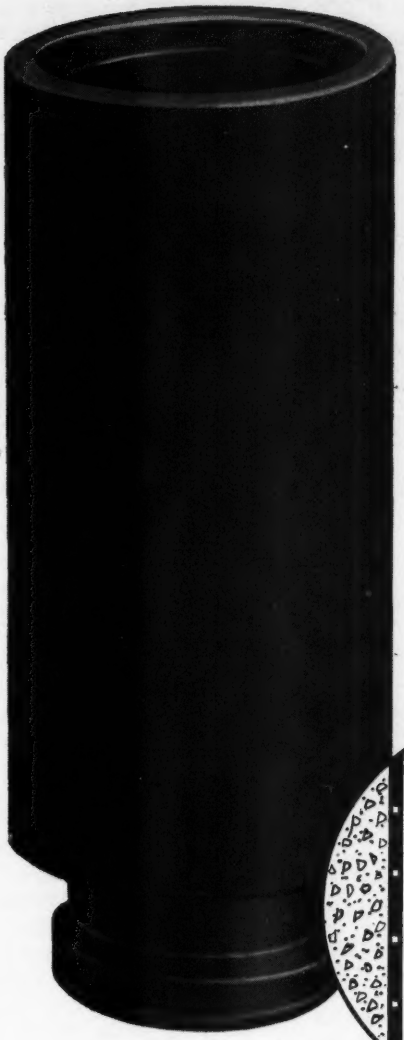
There are many areas in which such experts can be of inestimable value. The unnecessary exposure of volatile constituents to low pressures, high temperatures, or undue agitation is obviously something to be avoided. In the heavy oil fields many small operators still produce their wells into sumps, allow the water to settle out, and then pump the oil to the shipping tanks, but this practice is fast disappearing. Oil tanks, incidentally, breathe throughout the 24 hours of each day, exhaling as the absorbed warmth of the sun expands their content, and inhaling with the cooling of the night. This respiration can also be responsible for losses of considerable magnitude.

Specific Methods

In tanks with fixed roofs, the vapor space above the fluid is quite variable. It may be only a few feet when the vessel is full, but when it is being emptied the space increases. As the oil level drops, fresh air is sucked in. This absorbs more light hydrocarbons and should not be allowed to escape until it has been stripped of its cargo. By the same token, as the level rises, it pushes enriched vapors out through the vents. Perhaps the first effort to do anything about this was the development of the water-filled tank roof, and it was certainly a step in the right direction.

STOP JET EROSION ON TUBING with GUIBERSON'S

TUBING PROTECTOR RUBBERS



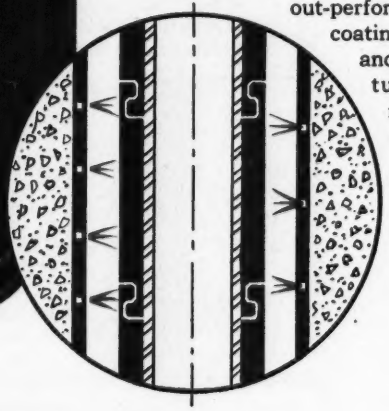
INTERLOCKING TYPE

Protect that joint of tubing opposite casing perforations from jet stream impingement with Guiberson rubbers. Tough and resilient, they absorb the jet stream energy that erodes away steel tubing.

Compression molded from a special compound developed in Guiberson's Rubber Laboratory, these extra-dense rubbers have highest resistance to live oil and gas.. excessive bottom hole temperatures. At the same time, they eliminate cutting and abrasion by sand.

Self-aligning, interlocking design completely covers tubing and speeds up installation (no exposed gaps). We field install them at no extra cost to stay put on 2" or 2½" tubing. They snap into place under light tension.

Independent laboratory tests, made under the severest sand and live oil jetting conditions, show Guiberson tubing protector rubbers out-perform and far outlast other coatings.. such as lead, plastics and hard metal. Guiberson tubing protector rubbers not only save tubing, but may save a pulling job.



OVERLAPPING TYPE

Guiberson's overlapping type tubing protector rubbers are available in 2" and 2½" tubing sizes. The 2" size is designed to pass through Guiberson drillable packers.

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Electronic Sniffers Even

Meantime, the conservation-minded people have come up with closed systems and vapor recovery devices of great variety to capture or hold the elusive gases that seem to be constantly seeking a way of escape. Tank paints that reflect heat have reduced evaporation losses greatly. Tanks with floating roofs (they ride on top of the fluid) eliminate the vapor space and consequently also eliminate a source of serious loss. Some engineers have employed cooled exhaust gases with a high content of carbon dioxide to fill the vapor spaces in tanks and reservoirs, thus providing at the same time a heavy blanket to hold down evaporation and an inert blanket to banish the fire hazard. Many mobile carriers such as tank wagons, tank cars and ocean-going tankers are equipped with devices to guard against loss by various means.

Refineries are now, in effect, closed systems in which every trickle of escaping vapor is incinerated, absorbed, or converted to innocuousness by some appropriate means. Conversion from threaded to welded joints in line pipe has cut leakage to inconsequential proportions, and wherever there is the slightest suspicion that wanton hydrocarbons are making a jail break, chemists and physicists, with amazingly sensitive electronic sniffing devices, soon find out all about it and close up the escape passages. Since, of course, there is no such thing as perfection, losses still do take place and are still of just as much concern to the producers, refiners and pipeliners.

Non-Accidental Losses

Up until now we have been speaking of accidental losses. But what of the contrived extractions to which it seems every industry is subject. Whenever valuable items of commerce are grown or produced it is almost a cinch that the covetousness of the ultra-acquisitive will eventually prevail over their morality and force them to some means of taking over, without cost, at least a part of the output. It doesn't matter whether one grows watermelons or builds bulldozers, sooner or later unscrupulous characters will horn into the act and try to get rich in a hurry by some ulterior process. Quite often the methods of these predatory beings are so clever that honest people can't understand why they don't apply their talents to legitimate business, where reward would be much more certain and much more satisfying. However, honest people are capable of thinking only like honest people, so they really don't know how much satisfaction a thief gets out of a temporary triumph. Most of the ones who get caught look anything but proud of themselves, regardless of how much prior skullduggery they have managed to get away with, so I for one am convinced that crime doesn't pay anyone but the TV networks.

Petty Thieves

The oil industry has not escaped the attentions of these avid souls, and many and devious have been the methods they have employed to accomplish their nefarious ends. I have already told about the theft of "midnight ethyl" or gas line drips from the condensate boxes on the lease lines. This, of course, derives its name from the fact that its surreptitious withdrawal took place in the dark of the moon and in a great many instances was the work of the burgeoning hot-rod brigade. The stuff had the requisite quality to run an automobile engine very effectively and thus had quite an appeal to proprietors of pedestrian chasers who were inadequately equipped financially for the responsibilities of ownership. This was a distinctly petty type of larceny but there were others of a more pretentious nature, as we shall learn.

Protective Planning

For a number of years one of my principal chores was to protect my employers against unnatural losses from pipelines and their accessories, in which areas oil companies seemed to be rather vulnerable. I remember helping to form an organization of chief gaugers for the purpose principally of standardizing methods of gauging, sampling and testing, but among its other concerns was this matter of thievery. We met with pipeline superintendents and sometimes the high moguls of transportation to discuss specific cases and take such steps as we deemed necessary to prevent their recurrence.

Genius Gone Wrong

One of the earliest to come to our attention was the case of a high-echelon accountant who established a fictitious lease with fictitious tank-

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from which he sold fictitious oil to his own company for some considerable time. The lease had a name beginning with Z so that it could be tacked on at the tail end of every report. He must have led a pretty hectic life during the course of his depredations, for it necessitated his getting to work before the regular crew arrived, opening the mail, and inserting his run tickets with their supporting documents. Investigators said he even had a typewriter altered so that it bore the same imperfections as the one in the district office on which his fabled lease was supposed to have its locale. He managed to get away with it for quite a while, but when the tank-strappers, unknown to him, went to check up on the lease shipping tanks, they couldn't even find the lease, and as they used to say over in England, "that wound up his little ball of yarn."

The Underground Maze

There have been a number of unauthorized appropriations that have been of major dimensions. Everyone in the oil business has heard stories of wandering drill bits that have accidentally penetrated the casing of producing wells, often some distance away, and, for the moment at least, depriving them of their production. Equally common are tales of pipeliners who have inadvertently tied in to another company's lines, emptying them or filling them, as the case might be. A glance at pipeline maps of congested oil areas like Signal Hill, Huntington Beach or Santa Fe Springs will quickly explain how such a mistake could happen. There is such a maze of lines under all three of these areas, it would seem almost impossible to locate any particular one with any degree of certainty. This, however, is reasonably simple with the help of a good map, and one of these days we propose to point out how much the petroleum industry owes to the increasing perfection of maps.

Larceny on a Grand Scale

Well and pipeline tappings are mostly of the non-intentional variety but there have been times when such goings on were by no means accidental. A snug little syndicate once built a structure over the top of a gasoline line, tapped it, and before their scheme was discovered had built their project into a fair-sized

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slotting on any size pipe up to 24" O.D.

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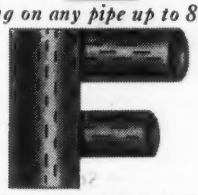

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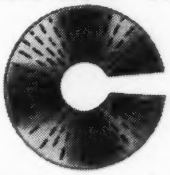

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string of service stations, each carrying its own brand name products and all being fed their commodities through the medium of a privately owned truck fleet. It is hard to believe that so much fluid could be extracted from any pipeline system without immediate detection, and with today's supersensitive pressure recorders it would probably be impossible, but there is no question that in the past it has happened.

Baby Gasoline Field

Mexican residents developed what was very likely the world's shallowest oil field about 30 years ago down on the ocean side at Wilmington. The discovery created no end of excitement, but although no one ever came forward to admit the fact, the strike was undoubtedly the result of a leak in somebody's gasoline line. The light, clear fluid was found at depths of a few feet and it was raised at the rate of five to ten gallons a day with hand pumps. The yield, although small, seemed to make the operators happy, but safety authorities were not at all happy with the hazards involved and they finally shut the field down, much to the disgust of the prospectors. A unique feature of this field was that the subsurface oil level rose and fell with the tide.

Of Sealing and Stealing

In the heavy-oil fields, it was not uncommon once, and perhaps is not uncommon yet, to gather the well effluent into a dirt sump, allow the water to settle out, and then pump the partially dehydrated oil into shipping tanks. When the gauger came along later to accept the oil he was obliged to seal closed all outlets from the tank except the suction outlet to his own company's system, which, on the contrary, he sealed open. In all shipping tanks there is a bleeder connection for draining off free water from the bottom of the tank, and this too was closed and sealed while the oil was being pumped out. Usually the gauger employs a passing-link chain in the sealing process. This is so-called because one end of the chain can be passed through the link at the other end, forming a loop. After the chain was looped around the pipe in this manner the loose end was sealed to a spoke in the gate. It would seem pretty difficult under these circum-

stances to open the valve without breaking the seal.

The Missing Link

I remember one resourceful but dishonest producer who found a way out of this difficulty. On the under side of the bleeder, where it wouldn't be seen, he had cut a center section from one link of the chain. All he had to do, thus, when the gauger had started the suction pump and gone on his way, was to remove this link, breaking the loop, open the valve and let part of the oil flow back into the sump while the rest was being pumped into the receiver's pipeline. Needless to say, he had the bleeder valve closed again and the removable link back in place before the gauger returned to take his low gauge. How much oil had been stolen by this particular filcher was a matter of the wildest conjecture. The producer naturally contended that he had hardly started his little scheme before it was discovered, but there was evidence that he had been practicing the deceit for some time longer than he cared to admit. In any case, he was more than pleased to make a pretty substantial payment in hard cash to keep what was laughingly called "his good name."

Stratification and Stuff

In the sampling of pipeline oil it has been acceptable for many years to take equal quantities of liquid from top, middle and bottom sample cocks let into the side of the tank, and to consider a composite of these representative of the total content. In most instances the sample cocks project inward just a few inches beyond the shell and end there, so that the individual samples, as they are drawn off, are reasonably representative of the fluid at their respective levels. It is a well known fact, however, that oil, especially light oil containing water and/or emulsion, tends to stratify as soon as it is quiescent. The water and emulsion, being heavier, sink slowly to the lower levels, and the dry oil, which is lighter, remains at the top. The wettest sample, thus, nearly always comes from the bottom sample cock. This, in other days, led to a novel method of defalcation that has since been rendered easily detectible through the use of a very simple device.

The Early Riser

The means by which a clever fraud was perpetrated in this case was by the simple expedient of tacking a riser on the lower sample cock, that is, a right angle bend turned up, and a long section of pipe with its opening in the dry oil at the top. As a result of this strategy, the gauger never did get a proportionate sample of the wet oil. His test for water content was consequently low and his calculation of the quantity of oil in the tank correspondingly high. During my peregrinations in the field this device was found in several isolated instances and was found once in every tank on a very sizable lease.

The Knockout Blow

It was practically neutralized by the invention of a neat little gadget, similar to a pocket knife with a very long haft and a very loose blade. This thing, with the blade in the closed position, was attached to the bottom sample cock by a threaded coupling. The bladed section was then pushed through the pipe. When it reached the end of the latter, the blade fell down at right angles and when it was pulled out was extended in a straight line with respect to the haft. If the device ran up against anything it could be felt, and, of course, when it was withdrawn in that instance the blade would still be in the closed position. Most gaugers used to carry this detecting tool as a part of their normal equipment, and attaching risers to bottom sample cocks is now almost defunct.

An Illicit Still

A cute steal that raised quite a furore about thirty years ago was perpetrated by a dehydrator operator. This lad had a farm out in the country on which he had a large underground tank. His little dodge was to take a lead off the top of the dehydrator, direct it through a barrel of cold water and collect the distillate in a second container. He took home his daily yield in the pick-up truck that he drove to work, dumped it in the underground tank and returned to his illicit still the following morning. His castle fell about him when he sold his farm to an executive of the company by which he was employed and gave a series of indiscreet answers to some probing questions on the source of his gasoline supply.

Reserve Oil Steps Up Field Operations

Reserve Oil and Gas Company announced the starting of three new wells on its leases in the Tejon area and released production data on two wells which were recently recompleted by a notch-fracing method.

In the North Tejon Field, where production is obtained for the most part from a thick Vedder Sand section at depths from 10,000 to 12,000 feet, two new wells will be spudded this week. The first, RWN #312-22, will be a one-mile easterly step-out located in the NW quarter section of Section 22, T 11N, R, 19W. The well is located on a 200-acre farmout in which Reserve will have an overriding royalty plus a one-third working interest in the first well and two-thirds working interest in succeeding wells after production is obtained. The well is programmed to a depth of 12,850 feet. Land between this step-out well and existing production is under lease almost exclusively to Reserve.

Approximately 3¼ miles westerly of Well 312-22, a location has been prepared on the Reserve-Standard lease for well W-T #318-18. Located in the SW quarter of Section 18, it is programmed as a Vedder zone completion at a depth of 11,920 feet. Reserve has a 35.5 per cent working interest in the lease on which the well is located.

Two miles southerly, well RST #86-30 is currently drilling at 2,268 feet. It is programmed for completion in the JV Sand at a depth of 8,800 feet. The Tejon Ranch and Sunray Mid-Continent are associated with Reserve in the venture. Reserve has a 40 per cent working interest.

Notch-fracturing of the producing sand has proven successful in two wells located in the easterly portion of the North Tejon Field. In the Reserve-Wehr-Butler Well #312-21 hydraulically induced fractures were propped by small aluminum pellets and the production was increased from approximately 30 barrels per day to a present production of 267 barrels of oil per day. The production is still cleaning up from the injected fluid and a still higher yield is anticipated. Reserve has a 55 per cent working interest in this well.

Russia in Oil Business

Stepped-up activity in international oil markets by Soviet bloc states should be regarded as "part and parcel of the whole Marxist campaign to promote their interests in the world at the expense of ours," U. S. oilmen were told.

The Russian threat must be answered by private oil companies of the Free World rather than by government, Arthur H. Dean of Sullivan and Cromwell (attorneys), New York, declared. He was a speaker at the concluding general session of the 40th annual meeting of the American Petroleum Institute in Chicago on November 16.

Soviet oil exports are now running at a rate of close to 400,000 barrels a day, an increase of almost 100 per cent in two years, Dean noted. It appears that Soviet exports currently comprise about five per cent of Free World demand outside the United States and Canada, he said.

At present the Soviets' best customers for oil are the countries of Free Europe, with a demand approaching one-quarter of the Free World's total or some 4.2 million barrels, he said.

Soviet oil today accounts for 80 per cent of the total supply to Finland and 27 per cent of Greece's total petroleum imports, he noted. In Italy this year, Italian purchases of Soviet crude are scheduled to double to 90,000 barrels per day, thereby increasing the Soviet position in the Italian market to more than 20 per cent, he said.

On the basis of cut prices at which the Soviets are selling crude in Italy "about the only way the private companies are going to be able to compete is to buy Soviet crude themselves," Dean stated.

"Because the private companies must obtain hard currencies to pay royalties, operating expenses, interest, taxes and dividends, they are not able to sell their oil entirely for soft currencies. The Soviets' willingness to take such currencies or local commodities gives them a tremendous competitive advantage, particularly in the underdeveloped countries of the world," he noted.

But all is not sweetness and light in the Soviets' attempt to grab international oil markets, Dean observed. In recent months they "have been running into some good, old-fashioned sales resistance," he said.

"Most Soviet crudes offered for export have high sulphur and salt water contents. This fact is of importance to countries which do not have the refining facilities, such as hydrogenation equipment, which would enable them to handle such crudes," he said.

Pointing out that "we must look upon Soviet petroleum exports as a phase of the cold war," Dean urged U. S. oilmen to meet the challenge with "risk taking, hard work, daring, courage, imagination, continuous improvements in operating techniques and quality of products."

In addition, he said, "the oilmen on this side of the Iron Curtain must be careful constantly to promote the elements of trust, confidence and respect which have been built up over long years of reciprocal trade among the countries of the Free World and which give to us an intangible, but very real, advantage over the Marxists."

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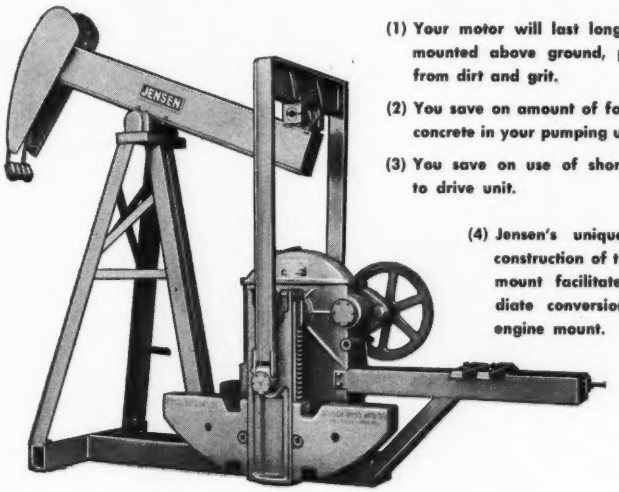

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JENSEN JACKS

Oil Producers Agency of California Suggests Addition to Proposed Changes in Oil Import Program

Because, under normal oil industry conditions, intercoastal shipments from District V to Districts I-IV are negligible;

Because in over a 10-year period 1950-59 there were only five years when intercoastal shipments from District V to Districts I-IV exceeded 3,000 b/d, and those five years were distress years in the District V industry;

Because intercoastal shipments of crude oil, nonexistent prior to the establishment of the import program, have tended to increase in the two years 1958-59 and therefore appear to be an evasion of its intent;

Because when intercoastal shipments in excessive volumes are considered as part of normal demand for District V the import quota for the District is inflated to the extent that such shipments are abnormal;

Because an inflated quota for District V is repugnant to the purpose of the program;

Oil Producers Agency of California urges the adoption of an additional section to the adjustments in the oil import level proposed by the Department of the Interior in its notice dated October 27, 1960.

Suggested language for the proposed additional section, to be inserted in an appropriate place, is:

"In District V, total demand as estimated by the U. S. Bureau of Mines shall be reduced by the amount by which shipments of crude oil, unfinished oils, and products from that District to Districts I-IV exceed such shipments in the corresponding period of the year 1957."

The Department of the Interior has recognized that shipments from District V to Districts I-IV are "leakages" in the program, as evidenced by the change proposed for Districts I-IV. The inclusion of the suggested addition to the proposed changes would serve to add strength to those changes.

Taxes: Again and Again and Again

While federal spending has risen rapidly in the years since World War II, the rate of increase has been far outstripped by the growth of spending in the individual states.

Oil Facts, a publication of the American Petroleum Institute, reports that expenditures by the federal government between 1946 and 1959 rose from $61.7 billion to $94.8 billion—an increase of 54 per cent.

By comparison, spending by individual states during the same period skyrocketed from $6.4 billion to $31.1 billion, a 386 per cent jump. Gross state indebtedness also shot up, from $2.3 billion in 1946 to $16.9 billion last year, an increase of 615 per cent, Oil Facts said.

The 1959 total state tax revenue was $15.8 billion—a little more than half of all state expenditures for that year. Additional funds came from bond revenues and federal aid payments.

Total state tax collections rose 164 per cent during the 1946-1959 period, while revenue from state gasoline taxes—a major source of state tax funds—climbed 207 per cent. In 1959 state gasoline taxes alone totaled $3.2 billion.

The average state gasoline levy in 1946 was 4.2 cents a gallon. By 1959 it had risen to 6.2 cents. Meanwhile the federal gasoline tax rose from 1.5 cents a gallon in 1946 to 4 cents, for a combined state and federal tax averaging more than 10 cents a gallon nationwide, Oil Facts reported.

SAS Introduces "Good Weather" Insurance

After centuries of talk about the weather, something has finally been done about it.

SAS passengers from the Western Hemisphere to Europe can now buy an insurance policy which compensates for bad weather experienced during their stay in Europe, Rudy Staeps, the airline's sales development manager, announced.

SAS, Inc., makes available for the first time in travel vacation history a weather insurance policy underwritten by Preferred Insurance Company of Grand Rapids, Mich., via its exclusive world-wide agents, Good Weather, Inc., of Great Neck, N. Y. Coverage is offered under 12 separate plans. Policies are issued for 16 days but can be extended as a second policy if the stay in Europe exceeds this period.

Mobil Oil Co. Changes Foreign Activities

Socony Mobil Oil Company, Inc., announced Nov. 14 that it will form a new operating division, Mobil Petroleum Company, which will be responsible for its business interests in the Far East, Australasia, and Eastern and Southern Africa.

Arthur V. Danner will be president of Mobil Petroleum. Danner, a director of Socony Mobil, will also be proposed for election as an executive vice president of Socony Mobil. He is now a senior vice president in charge of research and engineering.

The action results from an agreement under which the assets of Standard-Vacuum Oil Company, of which Socony Mobil Oil Company is 50 per cent owner, will be divided between Socony Mobil and the other owner, Standard Oil Company (New Jersey).

It was announced that, under the terms of a consent decree in a civil anti-trust case, Standard Oil Company (New Jersey) will terminate its joint interest in the present Standard-Vacuum Oil Company. Socony Mobil is not party to the consent decree.)

Preparatory steps for the division of Standard-Vacuum's assets have already begun. Standard-Vacuum and its affiliates will continue without interruption all activities in which they are now engaged. Only the ownerships of various Standard-Vacuum affiliates and branches are affected.

"The Mobil brand, which has been widely used in these areas of the world for over 50 years, will continue as our principal trade mark in the new Mobil affiliates," said Albert Nickerson, president and chief executive officer of Socony Mobil.

In some cases, ownership of Standard-Vacuum affiliates will be transferred intact to Mobil. In other cases, chiefly in refining, producing and marine transportation, varying percentages of the stock of Standard-Vacuum affiliates will be transferred to Mobil.

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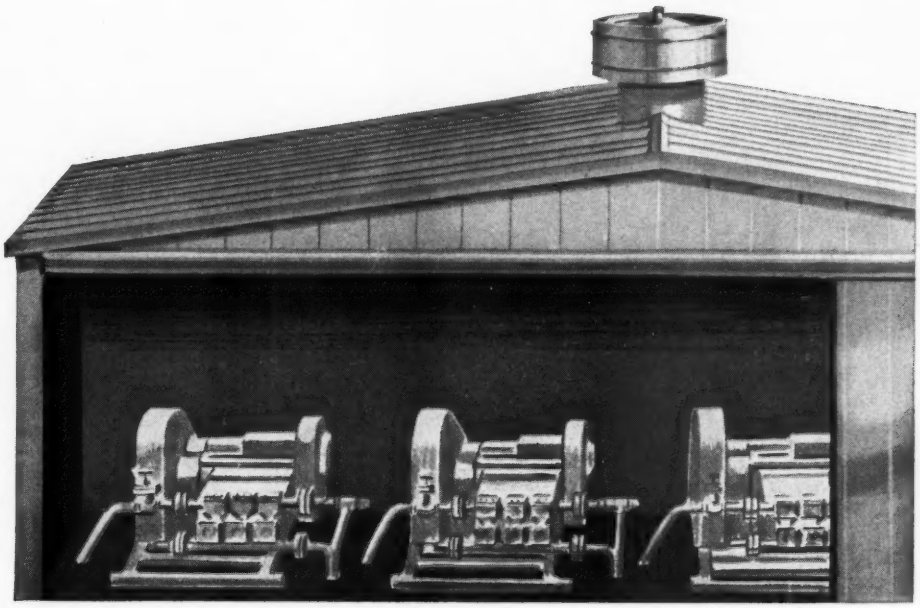
Simple construction with controlled flood lubrication makes Bethlehem TP's easy to maintain. And they're readily adaptable to the specific job—plungers and fluid ends are available in a choice of materials. Speed reducers are optional.

Check with the Bethlehem store in your area. If you'd like more information about our rugged TP's first, write for our Booklet 1644, *Bethlehem Power Pumps.*



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Choose between the TP-3, TP-4, and TP-6
Capacities: 100 to 9,565 BPD
Plunger Loads: 3,580 to 10,000 lb
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For more capacity, investigate Bethlehem's Duplex series, the U-33, UA-46, and U-510
Capacities: 155 to 13,500 BPD
Piston-Rod Loads: 2,400 to 12,000 lb
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Personalities IN THE NEWS

Stroud Appointed Coordinator - Logging by McCullough Tool Company

Stanley G. Stroud has been appointed to the position of coordinator - logging for McCullough Tool Company, according to a recent announcement by **I. J. McCullough,** company president.

Stroud has been with McCullough Tool Company for 13 years. His previous position was senior research engineer. He holds BS and MS degrees in electrical engineering from the California Institute of Technology and is an active member of the AIME, IRE and AIEE. His headquarters will be at the Los Angeles General Office, and his duties will include the coordination and integration of logging methods and techniques on a company-wide basis.

Stanley G. Stroud

California Research Corporation Increases Laboratory Personnel

California Research Corporation has increased its research personnel with the announcement of the following additions and promotions of staff members:

At the Richmond Laboratory: **Bobby G. Calhoon,** research engineer in process planning; **Eugene W. Madison,** research engineer in chemicals products development; **Elmore F. Chilton,** research engineer in refinery technical service; **Anthony E. Pepe,** research engineer in chemicals process development; **Ellen M. Mauer,** research engineer in process planning group; **Dr. Patrick H. Hess,** research chemist in chemical products development; **Dr. Thomas V. Liston,** research chemist in chemicals exploratory group; **Dr. Eugene D. Vessel,** research chemist in chemicals products development; **Dr. David J. MacDonald,** research chemist in petroleum process research group; **Dr. Harris E. Kluksdahl,** research chemist in petroleum process research; **Dr. Emilios P. Antoniades,** research chemist in chemicals exploratory research; **Robert Bacskai,** research chemist in the chemicals exploratory group; **Dr. Richard W. Fish,** research chemist in petroleum process research; **Robert L. Norman,** research engineer in process and plant design; **Dr. Arnulf Vollmar,** research chemist in chemicals exploratory research; **Vernon E. Summerfelt,** research chemist in chemical products development; **Dr. Donald J. Anderson, Dr. William H. Richardson** and **Dr. Shigeto Suzuki,** research chemists in chemicals exploratory research; **Charles L. Rimpley,** research mathematician in analytical and physical measurements; **Morton Orentlicher,** research engineer in chemicals process development; **Gilbert J. P. Chun,** research mathematician in process planning; **Dr. Ben G. Bray,** research engineer in petroleum process development; **Lester A. Wanninger, Jr.,** research engineer in refinery technical service; **Dr. P. R. Ryason,** promoted to senior research chemist in petroleum products research.

John C. Graham is now research engineer in refinery technical service at the El Segundo laboratory.

At the La Habra laboratory **David L. Hill** is now research engineer in geophysics development; **John D. Myers,** research engineer in geophysics development; **Aristide Rosman,** research engineer in producing research; **Dr. Concetto R. Giuliano,** research chemist in producing research; **John K. Adair, Jr.,** research engineer in producing research.

W. B. Anderson Promoted By Tidewater

The appointment of **William B. Anderson** as assistant manager of Tidewater Oil Company's Western Division Oil Purchase and Exchange Department was announced recently by **Charles R. Brown,** Western Division general manager.

Prior to taking his new assignment, Anderson was operations supervisor in the same department.

William B. Anderson

Anderson, a graduate of Yale University with a B.S. degree in Industrial Administration, joined

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Tidewater in 1955 as a bulk stock dispatcher at San Francisco, Calif. He later was named clean oil supervisor prior to becoming operations supervisor.

Californians Honored by API

Fourteen oilmen were presented "Certificates of Appreciation" for outstanding contributions to the oil industry.

The awards were made at opening sessions of the 40th annual meeting of the American Petroleum Institute in Chicago Nov. 14. Some 7,000 oilmen from throughout the United States and abroad attended the three-day meeting.

Those Californians honored for long and distinguished service to the oil industry, and the API divisions or groups which awarded the certificates, follow:

Division of Transportation: E. E. Wickman, Shell Oil Co., Los Angeles.

Fundamental Research: G. R. Lake, Union Oil Co. of California, Brea, Calif.

Committee on Crude Oil Measurements: George H. Supple, Mobil Oil Co., Los Angeles.

Safety: James E. Hill, Union Oil Co. of California, Los Angeles; Oliver W. Johnson, Standard Oil Co. of California, San Francisco.

Medical: John C. Ruddock, M.D., Richfield Oil Corp., Los Angeles.

NEW LITERATURE

The Youngstown Sheet and Tube Company Prepares Brochure on Yoloy Steel Pipe

Complete data on the corrosion-resistant qualities and physical features of Yoloy steel pipe are shown in a new, eight-page, file-size brochure by The Youngstown Sheet and Tube Company.

Yoloy, available in continuous weld and seamless standard and extra strong pipe sizes, is a copper-nickel, high strength, low alloy steel proved in 25 years of use. Its resistance to atmospheric, soil and chemical corrosion is illustrated in charts and graphs that compare Yoloy with carbon steel and wrought iron. Other charts compare the tensile, yield and impact strengths.

The brochure is further illustrated with photos of Yoloy pipe used in snow melting, salt brine transmission, bridge railing, lighting standards and steam and water lines.

Copies may be obtained by writing Advertisement Department, The Youngstown Sheet and Tube Company, Box 900, Youngstown, Ohio.

ANNOUNCEMENT
API Division of Production
1961
Midyear Committee Conference
JUNE 11-16
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SAN FRANCISCO, CALIF.

Mr. & Mrs. C. E. Braly aboard American President Lines' SS Polk

Ches Braly, president of B. & B. Pipe & Tool Company, accompanied by Mrs. Braly, is off on an around-the-world tour aboard the good ship Polk.

As nearly as can be determined, the purpose of the trip is to study methods of pipe perforation and related matters on the beach of Waikiki; in the geisha houses of Japan; the Sumatran and Javanese jungles; in and about the Taj Mahal at Agra; in the shadow of the pyramids of Giza; in the Roman Amphitheatre; the French Bistros and the New York speak-easies.

The journey will occupy about three months, and it is rumored that immediately upon his return Ches will start out on an extended lecture tour.

W. E. Lennard Promoted By Oil Well Supply

The appointment of **William E. Lennard** as the city representative of U. S. Steel's Oil Well Supply Division in Los Angeles was announced by **D. S. Grubbs,** manager of the division's California area.

Lennard was employed by "Oilwell" in August, 1948, as assistant district engineer at Los Angeles. He was appointed district engineer at that location in March, 1949, transferring to Long Beach in March, 1950, and back to Los Angeles in July, 1953, as assistant to area engineer. He was named manager of drilling equipment sales in December, 1959, holding this position in Los Angeles prior to his present appointment.

New Officers Elected By Long Beach D. & D. Club

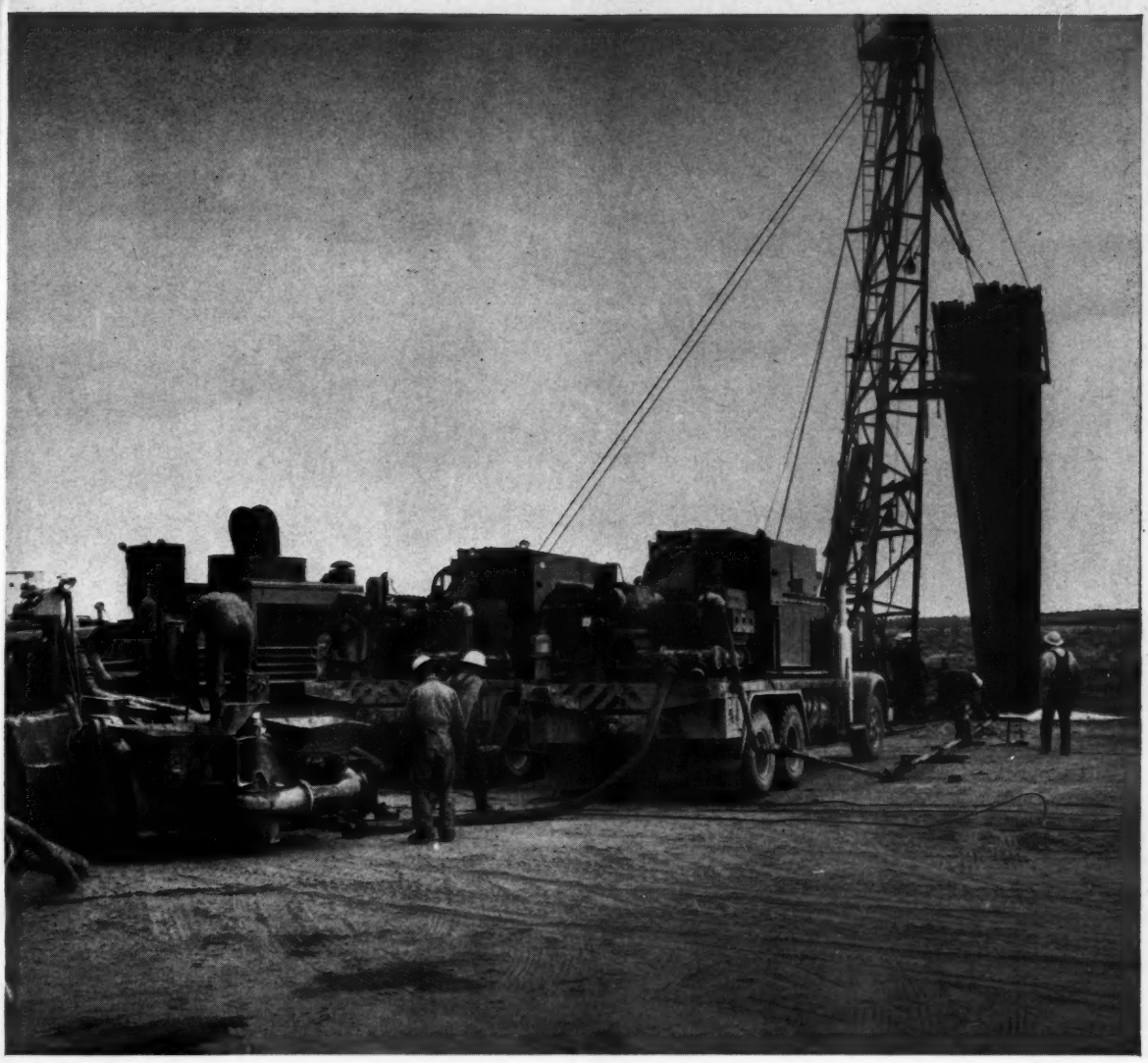
Mrs. Margaret Ericson, executive assistant with driltrol, was unanimously elected as president for the Desk and Derrick Club of Long Beach and installed at the December 9th meeting at the Lafayette Hotel.

Taking office with Mrs. Ericson were Miss Sarah Beth Smith (Baker Oil Tools, Inc.), first vice president; Miss Marilyn Hart (Shell Oil Co.), second vice president; Miss Muriel Carnahan (Pacific Pumps, Inc.), corresponding secretary; Miss Lucille Kvarnes (Richfield Oil Corp.), recording secretary; Mrs. Frances Meyer (Signal Oil & Gas Co.), treasurer; Miss Freda Kirk (Shell Oil Company) and Mrs. Lois Polak (Signal Oil & Gas Co.), directors; and Miss Alita Durden (Smith Tool Co.), sergeant at-arms.

Miss Zetta Belle Gregg, first vice president of the Los Angeles Desk and Derrick Club, installed the new officers.

Margaret Ericson is a certified professional secretary and is a member of Legal Secretaries Association and a past president of the Long Beach Chapter of National Secretaries Association.

Margaret was reservations chairman for the Desk and Derrick Club for 1959. She also served as field trip chairman in 1960, attended National Convention, Seminar, and Regional Meetings in 1959 and was alternate delegate to National Convention in 1960.



CALIFORNIA OPERATOR PAYS OUT FRAC JOB BEFORE TUBING IS RUN

Workover treatments by Dowell are helping many operators make their leases more profitable and increase their overall net profits. Here are just a few of the ways operators are using Dowell services and products: 1) To reduce lifting costs. 2) To hold production near maximum. 3) To retard decline rates. 4) To avoid too-frequent workover jobs. 5) To produce oil that could not be recovered otherwise.

In Ventura County, for example, production from a "G" sand well had declined to 38 bopd pumping. Dowell fractured using 50,000 gallons lease oil and 40,000 pounds sand. After treatment down casing, well came in flowing 500 bopd and was still flowing 300 bopd before tubing and gas lift valves were run. Production is now 175 bopd, but *$5100.00 treatment cost was paid out before tubing was run.*

If you have wells that are sick, or just too expensive to operate profitably, *dial Dowell!* Dowell services and products are offered from more than 150 offices and stations in the United States, Canada, Venezuela, Argentina, France, Germany and the Sahara area. Dowell, Tulsa 1, Oklahoma.

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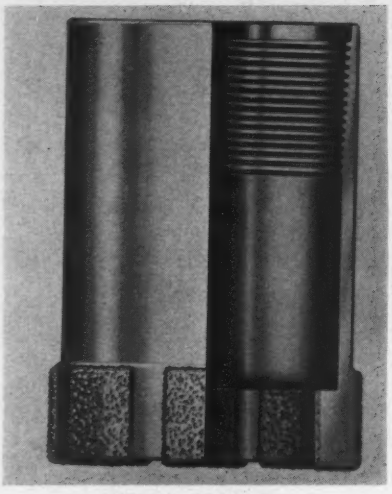


Globaloy Mill Shoe

The Globaloy Mill Shoe For Fast, Safe, Economical Milling of All Types of Junk

Designed for milling up stuck fish in conjunction with the Globe Junk Basket for fast, dependable recovery of all the loose pieces in the hole, The Globaloy Mill Shoe is the ideal tool for milling a wide variety of Junk in a fraction of the time required by conventional shoes.

The Globaloy Mill Shoe represents a metallurgical milestone in safe, fast, economical, rough abrasive milling operations. An exclusive product of Globe Oil Tools Company, Globaloy consists of sintered tungsten carbide particles which are applied to Mill Shoes by a special binding process which suspends the carbide particles in an extremely tough and shock absorbing matrix.

An infinite number of sintered cutting particles support all sides of the Globaloy Mill Shoe to provide continuous self-sharpening no matter how difficult the milling job. When one cutting edge dulls, another takes over until the entire matrix is exhausted. Globaloy Mill Shoes cut faster, require fewer round trips and provide greater economy and safety. For export sale only.

New Buttress Thread Tubing Announced

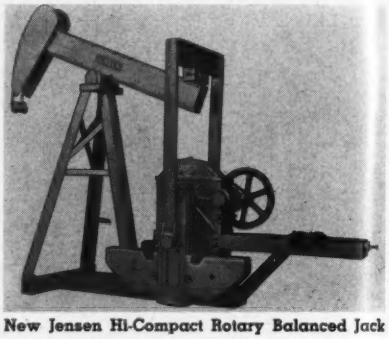
California was recently visited by a delegation of top executives from United States Steel Corporation's National Tube Division, for the purpose of introducing a new non-upset tubing joint. Characterized by what has been termed a buttress thread, the new tubing joint has no extra thickness of metal in the threaded area, yet despite a marked reduction in outside diameter, retains approximately the full strength of the pipe body.

The patented thread is so designed that pipe and coupling can be stabbed together on normal drop impact and, without thread damage or cross threading, will automatically engage in much the same manner as do railroad car couplings.

Strength of the joint (98% of pipe body strength) in tension is attributable to the form, unusual strength and taper of the thread.

Many California petroleum people took advantage of the opportunity to attend the brief symposium which was held at the Los Angeles Biltmore in mid-October, and later to join the panel of experts for refreshments, a fine buffet lunch, and some additional impromptu education. Among those who literally bared their chests to the barrage of questions that were hurled at them by the perennially inquisitive denizens of the derrick groves were Robert E. Williams, vice president in charge of sales for National Tube Division of United States Steel Corporation, Pittsburgh; Ralph W. Seely, vice president of U. S. Steel's Columbia-Geneva Division, San Francisco; William M. Frame, director of research and development, James H. Degnan, manager of oil country tubular products, and Andrew C. Temmel, manager of engineering sales service, all of the National Tube Division, Pittsburgh; and last, merely because of the dictates of protocol and not for any lack of engineering or expositional acumen, the popular local representative, Elmer Wycoff.

It was stated that the buttress thread tubing is currently available in J, N, and P grades, sizes 2⅜" and 2⅞" OD, and other sizes will be available later.



New Jensen Hi-Compact Rotary Balanced Jack

New Rotary Jack By Jensen Bros.

Jensen Brothers Manufacturing Company, Inc., Coffeyville, Kansas, reveals their new Jensen Hi-Compact Rotary Balanced Jack. The Hi-Compact Jack has been engineered and designed with time-saving, money-saving features. Jensen's unique bolted construction of the motor mount facilitates immediate conversion to an engine mount. The motor mount, elevated above ground level, prolongs the life of the motor, protecting it from dirt, grime. The amount of foundation concrete is greatly reduced in the pumping unit base and shorter belts are required to the drive unit. The new Jensen Hi-Compact Rotary Balanced Jack retains all previous outstanding features, plus self-aligning Pitman bearing housings. All bearings are prelubricated and sealed at the factory for long, service-free operation. Jensen Jacks are also noted for their famous one-man rotary balance adjustment — the simple rack and pinion system that can be adjusted by one man, standing at ground level.

New Baker Insert Valves Feature Improved Sealing, Controlled Casing Fill

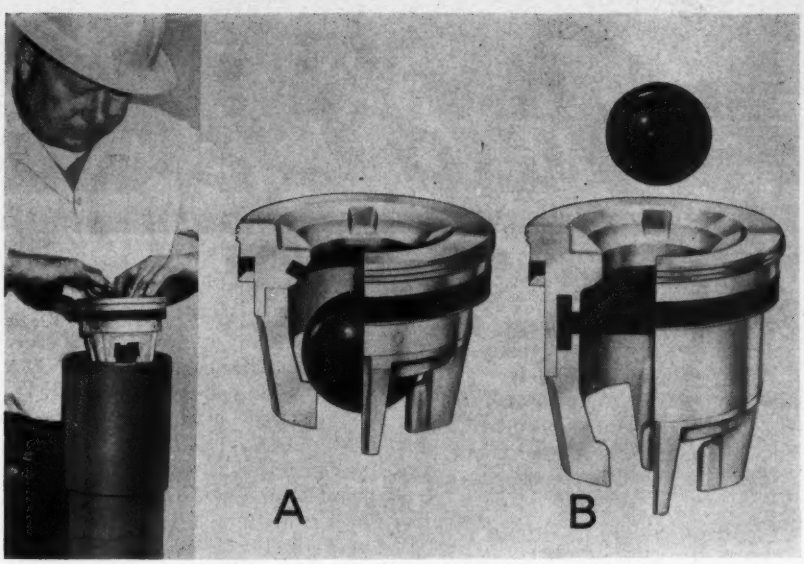
Two new Insert Valves, combining the convenience and dependability of proved Baker Primary Cementing Equipment with a newly engineered seal that improves insert performance, are now available from Baker Oil Tools, Inc. These valves are installed in casing couplings between the pin ends of made-up joints, and provide an economical substitute for conventional floating and fill-up collars in cementing programs with moderate-depth requirements.

Baker Insert Float-Check Valve (Fig. A) employs the famous Baker "floating ball" as a back-pressure valve. It serves as a float valve while running casing, and as a stop for the cement plug during and after cementing.

Baker Insert Flexifill Valve (Fig. B) incorporates the automatic flow control diaphragm used so successfully in Baker Flexiflow Equipment. During running-in, this variable rubber orifice gives maximum relief from pressure surges and prevents overflow of casing. After circulation a Bakelite ball is pumped through this orifice to act as a back-pressure valve for the cementing operation.

An important design feature of these new valves is the carefully engineered valve-to-coupling seal. This seal is backed up on the top side by the body of the valve itself and is compressed for positive seal-off on its underside by a metal back-ring which is forced upward by the pin end of a casing joint. Both the seal and the back-up ring have matching tapers. Advantage of this new design is twofold: the seal is prevented from extruding, and it can adapt better to varying pin-to-pin distances.

Both Baker Insert Valves are constructed entirely of easy-to-drill aluminum, plastic and rubber. Because both utilize a Bakelite ball, there are no moving parts or springs to fail. These valves are quickly and easily made up. A valve is simply screwed hand-tight into an already made up standard A.P.I. 8 Round thread coupling and then tightened with a wrench which is furnished with each valve. The next joint is made up over the valve, the valve is run in the hole.



New Baker Insert Valves

Baker Insert Valves come in all popular O.D. casing sizes. Complete information on this new equipment is available from local Baker representatives, or from the manufacturer direct: Baker Oil Tools, Inc., P. O. Box 2274, Terminal Annex, Los Angeles 54, California.

Bethlehem Steel Uses New Plant and Process

High-strength large-diameter steel pipe for cross-country transmission of high-pressure natural gas is now being produced at Bethlehem Steel Company's new expanded line pipe mill at Steelton, Pa.

The new mill is expected to triple gas pipe production at Steelton. Approximately 25,000 tons of line pipe from 18 to 42 inches in outside diameter can be produced each month. This is equal to about three miles of pipe a day.

Before the mill went into operation, Bethlehem produced this pipe by first rolling 20-ft. lengths of steel plate into cylindrical form, and then butt welding two sections together to form the standard 40-ft. length of gas transmission pipe.

Now Bethlehem forms this pipe on two giant presses.

Since this gas transmission pipe is not a shelf item, but instead made to order per the customer's specifications, little storage space is required. Sections are shipped out as made; for example, eleven 36-inch diameter pipe sections per rail car, or fourteen 30-inch sections per car.

Kerryn King, V. P. Texaco, Says Keep Employees Informed

The oil industry and its employees must work to prevent the industry from being broken on the wheel of adverse public opinion and legislation, oilmen attending the 40th annual meeting of the American Petroleum Institute were warned.

Kerryn King, vice president and assistant to the chairman of the board of Texaco Inc., New York, called upon oil companies to keep their employees fully informed about all the facts pertaining to industry problems.

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Field Development

LOS ANGELES BASIN

Palmdale Wildcat Test

Butte Petroleum Company, Inc., c/o Harry Baker, Palmdale, California, is moving in rotary to drill Ruby No. 1 in the southeast quarter of Section 26-6n-10w. Proposed depth of the test is approximately 2300 feet.

Orange County Wildcat

Manespo Refining Company of Long Beach has staked a location for Biddle No. 1 on Lot No. 2 of the Taylor Tract in Section 4-4s-9w. The location falls one mile south of the town of Atwood and will be drilled to about 2500 feet. The company has 500 acres under lease.

Inglewood Completion for Tidewater

Tidewater Oil Company completed Vickers No. 65 flowing 550 b/d of 23.8 gravity oil with a cut of 2.8 per cent. Flow was through a 28/64" bean with pressures of 100/-970 psi and gas flow was 300 mcf per day. The completion is in the new Faulted Moynier Zone on the south flank of the Inglewood Field in Section 7-2s-14w and has a total of 1397 feet of zone open to production from four perforated intervals within 5606-7000 feet. Total depth is 7000 feet with 7" casing cemented at 5606 feet. Rotary is being moved to Vickers No. 66, a southeasterly offset to the completion.

Prado Dam Completion

Alpoil Company completed Gov.-TMP-C No. 1 pumping 40 b/d of 21.4 gravity oil cutting 22 per cent mud. Production later dropped to 8 b/d and the well will be reworked. Located in the southwest quarter of Section 17-3s-7w in Riverside County, the well was drilled to a total depth of 3569 feet and plugged back to 3125 feet. 7" casing is cemented at 2752 feet.

Inglewood Field Completions

Standard Oil Company completed Buckler Community No. 1-A, a southeast outpost well, flowing on gas lift 60 b/d of 27 gravity clean oil from the interval 7225-7695 feet. Located at the intersection of Slauson and La Brea Avenues in Section 16-2s-14w, the completion was originally drilled to a total depth of 13,516 feet by Humble Oil & Refining Company.

Standard Oil Company's L.A.I. Community No. 1-3 located in Section 17-2s-14w, was completed flowing 339 b/d of 29 gravity oil with a cut of 0.5 per cent. The completion was drilled to a total depth of 9390 feet and cemented 7" casing at 8975 feet.

Pico Canyon

Standard Oil Company is starting "C.S.O." No. 102 located near the east quarter corner of Section 2-3n-17w.

NORTHERN CALIFORNIA

Colusa County Gas Discovery

Occidental Petroleum Corp. completed Sachreiter No. 1 as a new gas field discovery flowing 12,470 mcf of gas per day from the F Zone of the Upper Cretaceous with a flow pressure of 2900 psi. Shut in pressure was 4450 psi. Drilled to a total depth of 8263 feet, 5½" casing was cemented at 7880 feet and gun perforated from 7645-7656 feet. The new discovery is five miles west of the Grimes Gas Field in the southeast quarter of Section 4-14n-1w.

Texaco Outpost Completion

Texaco Inc. completed River Island Unit No. 1, an outpost test of the River Island Gas Field, flowing 1000 mcf of gas per day through a 3/16" bean with 1440 psi flow pressure. Flow is from the Nortonville, perforated at four spots within the interval 3469-3558 feet. The completion was drilled to a total depth of 6100 feet and after plugging back cemented 2⅞" casing at 3765 feet. The well is located in the northeast quarter of Section 17-4n-4e in Sacramento County.

Gas Discovery for Atlantic

Atlantic Oil Company completed U. E. Frye No. 1 as a new gas discovery dually flowing 10,750 mcf of gas per day from both F Sand zones. Flow from the Upper Zone, perforated at intervals from 5900-6173 feet, was 5250 mcf of gas per day through an 18/64" bean with a flow pressure of 2500 psi and a shut-in pressure of 3050 psi. From the Lower Zone, perforated at five intervals within 6655-6820 feet, flow was 5500 mcf per day through an 18/64" bean with a flow pressure of 3200 psi and a shut-in pressure of 3700 psi. The completion is located on the southeast quarter of Section 27-15n-1e near Grimes in Sutter County.

McCulloch Oil Corp. Test

McCulloch Oil Corp. is moving in rotary to drill McCulloch-Duarte No. 1 in the northwest quarter of Section 17-2n-1w in Contra Costa County. Located in the Los Medonis area, the test is about 3000 feet southeast of production and will be drilled to about 5000 feet.

Sutter County Test

Sunray Mid-Contient Oil Company has staked location for Sunray-Cameron-Dougherty No. 1 in the center of the northwest quarter of Section 31-12n-3e. The test is in the Knights Landing area about twenty miles northwest of the city of Sacramento.

Standard Outpost Gas Test

Standard Oil Company is preparing rig site for Blossom Community No. 2, an outpost test of the Thornton Gas Field in the northwest quarter of Section 32-5n-5e in San Joaquin County. The well is a northwesterly offset to its recently completed Blossom Community No. 1, also an outpost test.

Colusa County Gas Test

Universal Consolidated Oil Company is moving in rotary to drill Rheem-Jeffreys-McLeod No. 1 located in the southwest quarter of Section 5-17n-1e. The test will be drilled to about 3000 feet.

Gulf Gas Test

Gulf Oil Corp. of Calif. is grading rig site for Gulf-Erdman Tract No. 1, an easterly offset to Goff-Erdman No. 1, the discovery well of the Kirk Gas Field. Located in the southwest quarter of Section 15-13n-1e in Colusa County, the well will be drilled to approximately 7600 feet.

Walnut Grove Gas Completion

Texaco Inc. completed Cowell Foundation No. 1 flowing 1620 mcf of gas per day through a ¼" bean with 100 psi from the perforated intervals 2908-2910, 3002-3006 feet. Located in the Walnut Grove Field on the northeast quarter of Section 14-4n-4e in San Joaquin County, the completion was drilled to a total depth of 8495 feet and failing to develop production in the lower portion of the hole, was plugged back and 4½" casing cemented at 3100 feet.

Tehama County Wildcat Test

McCulloch Oil Exploration Co. and Sunray Mid-Continent Oil Co. awarded a contract to Brown Drilling Co. to drill Ancordoguy No. 1 in the southeast quarter of Section 7-25s-4w. The rig site is eleven miles southwest of the town of Red Bluff and will be a 5000 foot F Zone test.

Two Gulf Gas Tests

Gulf Oil Corp. of Calif. has staked locations for two outpost gas tests southeast of the McMullin Ranch Gas Field in San Joaquin County. Perrin Unit A No. 1 will be drilled in the northwest quarter of Section 31-2s-7e about 3000 feet southeast of a Great Basins producer, and Perrin Unit A No. 2 will be drilled in the southwest quarter of Section 30-2s-7e approximately 2000 feet southeast of production.

Rio Vista Dual Completion

Brazos Oil and Gas Company completed City of Isleton No. 2 flowing 4425 mcf of gas per day from both the Nortonville and Domengine perforations. Flow from the Nortonville perforations 3716-3720, 3730-3740 feet, was 2075 mcf per day through a 17/64" bean with 1225 psi flow pressure. From the Domengine perforations 3965-3963 feet flow was 2350 mcf per day through a 17/64" bean with 1400 psi flow pressure. Located in the southwest quarter of Section 25-4n-3e, the well was drilled to 6298 feet and plugged back to 4055 feet. 7" casing is cemented at 4010 feet.

Kingdon Area Gas Test

McCulloch Oil Exploration Co. of Calif. is preparing to drill McCulloch-Stephani No. 1 located in the southeast quarter of Section 34-3n-5e in San Joaquin County. Nearest production to the wildcat test is at the McDonald Island Gas Field five miles to the southwest.

McCulloch Oil Corp. Wildcat

Four miles east of the Roberts Island Gas Field, McCulloch Oil Corp. has awarded a contract to Brown Drilling Co. to drill McCulloch-Weston No. 1. Location of the wildcat test is in the southeast quarter of Section 21-1n-4e in San Joaquin County.

Stanislaus County Wildcat

Great Basins Petroleum Company is grading roads and rig site for Machado No. 88-26 to be drilled in the southeast quarter of Section 26-4s-9e. The wildcat will be a 7000 foot gas test and is seven miles northwest of the town of Turlock.

HILLMAN-KELLEY

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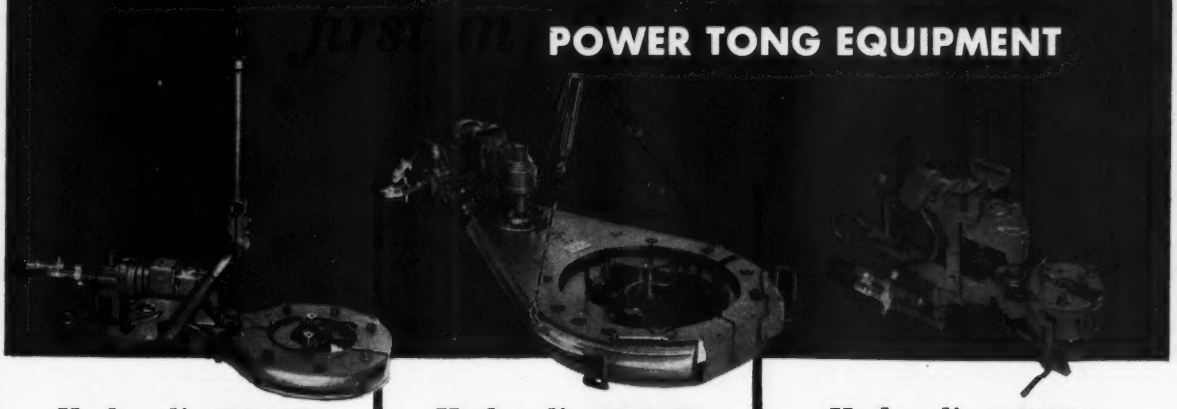

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Humboldt County Wildcat

Zephyr Oil Company is moving in rotary to drill Leon Oro Blanco No. T-5 on the northwest quarter of Section 35-4n-2w in the South Humboldt Bay area. The test will be drilled to about 4600 feet and is approximately ¾ mile northwest of its field discovery well No. T-4.

Butte County Gas Test

Buttes Gas and Oil Company has staked a location for Justeson No. 2, a wildcat gas test in the southeast quarter of Section 2-17n-1e. The test is four miles south of the Schorr Ranch Gas field in the West Gridley area.

COASTAL AREA

Standard Offshore Test

Standard Oil Company is preparing to move in the floating vessel, S.M. No. 1, into position to drill State 2198.1 No. 3 in projected Section 3-4n-31w. The new location is ½ mile offshore from Orella. State 2198.1 No. 2 in projected Section 2-4n-31w is drilling below 4000 feet.

San Mateo County Test

Neaves Petroleum Developments is grading location for Neaves-Union-Burns No. 13 in the southwest quarter of Section 20-7s-4w. The well is an outpost test of the La Honda Field.

SAN JOAQUIN VALLEY

North Tejon Wildcat Test

Reserve Oil and Gas Company has awarded a contract to K. L. Kellogg & Sons to drill R-W-N No. 312-22 in the northwest quarter of Section 22-11n-19w. The well will be drilled to about 12,000 feet to test the Vedder Sands and is one mile east of present production of the North Tejon Field.

Mountain View Area Wildcat

Socony Mobil Oil Company, Inc., is drilling below 2000 feet on Socony Mobil-KCL No. 21-27 located in the northwest quarter of Section 27-30s-28e. The well is located 2½ miles west of the Mountain View Field and will be drilled to about 10,000 feet.

Fruitvale Extension Completed

P. S. R. Company completed Sa-Do-Jo No. 2 flowing at a 400 b/d rate through a 32/64" bean and was later placed on the pump flowing by heads 400 b/d of 24 gravity oil cutting 0.1 per cent. A possible new fault block discovery, the completion is located in the northwest quarter of Section 28-29s-27e, ½ mile west of the main Fruitvale field. Total depth is 4224 feet with 7" casing cemented at 4189 feet.

Southeast Burrel Completion

Arrowhead Exploration Company completed U.C.L. No. 58-1 flowing 90 b/d of 32.0 gravity oil with a cut of 40 per cent from 40 feet of perforations within the interval 6519-6330 feet. Total deptah of the well is 7000 feet with 4½" casing cemented at 6650 feet. The well is located in the northeast quarter of Section 8-17s-19e.

McKittrick Deep Test

Tidewater Oil Company is planning to drill a deep test in the McKittrick area on the southwest quarter of Section 19-30s-22e. McKittrick Unit No. 1 will be drilled to about 11,500 feet.

Richfield Oil Completion

Richfield Oil Corp. completed KCL-L No. 141-36 flowing 120 b/d of 20.6 gravity oil with a cut of 1 per cent. Flow was through a 23/64" bean from the perforated interval 5583-5730 feet. Located in the southwest quarter of Section 36-11n-20w in the Windgap area of the Wheeler Ridge field, the well was drilled to a total depth of 5730 feet and cemented 7" casing at 5583 feet.

McDonald Anticline Outpost Testing

Luard Corp. is moving in production unit to test Theta-Luard No. 1 located in the southeast quarter of Section 20-28s-20e, Kern County. The first test will be made on Oceanic Zone perforations from 5910-5930 feet. The test was drilled to a total depth of 6002 feet and after running logs and sidewall sampling cemented 5½" casing at 5960 feet.

Belgian Anticline Completion

Shell Oil Company completed A.M.L. No. 33-17 flowing 412 b/d oil with a cut of 20 per cent through a 30/64" bean with pressures of 90/560 psi. 4½" casing was cemented at 2009 feet and gun perforated from 1857-1888 feet. Located in the northwest quarter of Section 17-30s-21e, the well was drilled to a total depth of 3500 feet and plugged back inside the casing to 1953 feet.

Signal Outpost Test

Signal Oil and Gas Company is drilling below 2500 feet on KCL No. 12-14 located in the northwest quarter of Section 14-30s-26e. The well will test the Stevens Sand and is a northwest offset to production in the Gosford Field.

Arrowhead Exploration Test

Arrowhead Exploration Company is starting KCL No. 12-27 in the northwest quarter of Section 27-11n-22w in Kern County. The well is a northeasterly offset to a Richfield Oil Corp. producing well and will test the Etchegoin at about 7800 feet.

San Benito County Test

Fred Ash & Sons of Salinas have staked a location for Ash No. 1 in the southwest quarter of Section 28-16s-12e. The location is on the Ciervo Anticline.

Lomerias Ranch Gas Test

Petrolex Inc. is grading rig site for San Sebastian No. 1 located in the southwest quarter of Section 28-12s-5e in San Benito County.

Three Victory Oil Tests

Victory Oil Company has staked locations for three shallow tests in the Cymric Field. McKittrick Front No. G-18 and G-25 are located in the northwest quarter of Section 6-30s-22e and Well No. 26A will be drilled in the southeast quarter of Section 26-29s-21e.

Fresno County Leases Sold

Western Petroleum Company has acquired approximately 2000 acres in and near the Helm Field from R. B. Montgomery and Richard S. Rheem. The company is planning an extensive development program.

Eight Midway-Sunset Wells

Signal Oil and Gas Company has staked locations for five development wells in the field. Four wells on its Metson lease, No. 9-24, 10-24, 11-24 and 12-24 will be drilled on Section 24-11n-23w. Well No. 101 will be drilled on Section 6-11n-23w.

Formax Oil Company is preparing to drill Wells No. 55, 56 & 57 on the southeast quarter of Section 36-32s-23e.

OTHER AREAS

Alaska

Union Oil Company of Calif. and The Ohio Oil Company completed Kenai Unit No. 14-4 flowing 4130 mcf of gas through a 3/8" bean with 1200 psi flow pressure from the perforated interval 4310-4319 feet. Total depth of the completion is 5125 feet and 7" casing is cemented at 5100 feet. The well is located in the Kenai area on the southwest quar-

ter of Section 4-4n-11w two miles east of the field discovery well.

Colorado Oil and Gas Company drilled to a total depth of 8634 feet on Dangerous River No. 1 and after running logs plugged and abandoned the test. The well was located in the northwest quarter of Section 17-29s-3?e on Cape Fairweather.

Arizona

Western Petroleum Company has acquired leases on over 10,000 acres of land on and surrounding the Pinta Dome Helium Gas Field. Shortly after the first of the year four wells will be drilled, two offsetting production and two exploration tests. A fifth well will also be drilled on a lease block of 4320 acres, 15 miles north of Holbrook. The well will be a 4800 foot test.

Colorado

Sinclair Oil & Gas Company has staked a location for Glade Canyon Unit No. 1, a western Colorado wildcat test in Dolores County. Located in the northeast quarter of Section 13-40n-17w, the well is scheduled to test the Devonian at 8900 feet.

Belco Petroleum Company's Unit No. 1 located in the northeast quarter of Section 30-44n-19w in San Miguel County, drilled to a total depth of 9642 feet and after plugging back to 9455 feet cemented 5½" casing at 9450 feet. The well, an apparent Mississippian discovery, is south of the southeast Lisbon area on the Egnar unit. Top of the Mississippian was logged at 9053 feet.

Montana

Three Mesaverde wildcat test locations have been staked by the Belco Petroleum Corp. in Stillwater County. In the West Lake Basin area, ten miles west of production in the Lake Basin Field, Belco will drill Zinder No. 1 in the northeast quarter of Section 18-1n-20e and will test the Mesaverde at 2650 feet. Nelson No. 1, a 2450 foot Mesaverde test, is located in the northeast quarter of Section 34-1s-20e. In the southwest quarter of Section 1-1s-18e a location has been staked for Van Oosten No. 1, a wildcat well to test the Mesaverde at 2675 feet.

King-Stevenson Oil Co. has staked a location for Wyrich No. 1 in the northeast quarter of Section 22-9n-59e in Fallon County. The well will test the Red River at about 9600 feet and is a southerly extension to the Cupton Field.

Nevada

Churchill Drilling Corp. is ready to spud Bevin No. 1 located near the town of Fallon in Section 3-18n-28e in Churchill County. Proposed depth of the test is 12,000 feet and it will be drilled by the Falcon Gas & Petroleum Corp.

Shell Oil Company is drilling below 4000 feet on Eagle Springs Unit No. 62-35 located in the northeast quarter of Section 35-9n-57e in Nye County. The well is to be a 7800 foot test.

New Mexico

Century Exploration Company is grading roads and rig site for Mobil-Federal No. 1-6, a wildcat test located in the northwest quarter of Section 6-24n-8w in San Juan County. The well will test the Dakota at about 6900 feet and is located on a farm-out from Mobil Oil Co. Nearest Dakota production is three miles to the north.

Aztec Oil & Gas Company completed Robinson-G No. 5 flowing 265 b/d oil through a 17/64" bean from the Gallup perforations 5824-5810 feet and 5762-5748 feet. The completion is located in the southeast quarter of Section 15-28n-13w in San Juan County, and was drilled to a total depth of 5860 feet. Top of the Gallup was logged at 5398 feet. 4½" casing is cemented at 5859 feet. Closest Gallup production is at Totah two miles to the north.

Utah

Two tests are scheduled for Emery County, one by Amerada Petroleum Corp. and one by Texaco Inc. Amerada's wildcat test, USA-Elliott No. 1, is located in the southeast quarter of Section 14-24s-9e and will test the Cambrian at about 3500 feet. Texaco's test, Unit No. 2, on the Temple Springs Unit, will be a 7200 foot Mississippian test and is located in the southwest quarter of Section 22-25s-14e.

Phillips Petroleum Company is ready to drill Uteland Butte No. 3, a wildcat test located in the southeast quarter of Section 31-10s-19e in Unitah County. The well will test the Wasatch at approximately 5900 feet.

Trend Oil Company completed Unit No. 1, an outpost test two miles east of the Westwater Field, flowing 6100 mcf of gas per day from the Dakota and 7200 mcf of gas per day from the Morrison. 5½" casing is cemented at 4580 feet and perforated at eight intervals from 4558-4264 feet. Top of the Dakota Sand was logged at 4236 feet and top of the Morrison at 4393 feet. Located in the southwest quarter of Section 10-17s-24e in Grand County, the well was drilled to a total depth of 4729 feet and completed with a fish in the bottom of the hole.

Wyoming

Argo Oil Company has announced a location for a Johnson wildcat test, Meike No. 1, to be drilled in the southwest quarter of Section 33-44n-81w. The well will test the Tensleep at about 7800 feet and is two miles southeast of Tensleep production at the North Fork Field.

The Superior Oil Company has staked a location for Hugus Draw Unit No. 1, a Carbon County wildcat, in the northeast quarter of Section 29-20n-87w. The location falls three miles northeast of Hatfield Dome and will test the Tensleep at about 9500 feet. This Superior test will be the first on the Hugus Draw Unit.

The production of the Arch Unit has again been extended ½ mile to the north with the completion of Forest Exploration Company's Arch 7-2 No. 17 flowing 336 b/d oil through a ½" bean. Top of the Almond was logged at 4836 feet and flow is from the Almond perforations 4841-4854 feet. Located in the northwest quarter of Section 7-19n-99w in Sweetwater County, the well was drilled to a total depth of 5035 feet and cemented 5½" casing at 5035 feet.

Three different operators have announced locations for Morrison tests in the Powder River Basin. Fifteen miles northwest of the East Mule Creek Field, Jeff Hawks is ready to spud Government No. 1 located in the northwest quarter of Section 15-40n-63w in Niobrara County. The test will go to 5800 feet. Davis Oil Company has a location for Cook-Biggerstaff No. 1 in the northeast quarter of Section 27-52n-70w in Campbell County. The test will be drilled to 7000 feet and is five miles southeast of Minnelusa production at Mitchell Creek. Five miles north of the Adon Field, Rio Oil Company will drill Federal-Dalley No. 1 in the southeast quarter of Section 7-53n-71w. Proposed depth of the Morrison test is 7400 feet.

THIS LAUGH

OFF!!

A minister, returning from an early-morning sick call, noticed a parishioner staggering home from the local pub.

"Let me help you to the door," he told the man.

At the door, the tipsy man urged the reverend to come in, but the cleric begged off because of the late hour.

"Pleash, revren, jusht for a minute," he asked. "I want my wife to see who I been out with tonight."

One blistering, hot day when they had guests for dinner, a mother asked her 4-year-old son to say grace before the meal.

"But I don't know what to say," the boy exclaimed.

"Oh, just say what you hear me say," the mother replied.

Obediently, the boy bowed his head and murmured: "Oh, Lord, why did I invite those people here on a hot day like this?"

A farmer's wife objected to her husband's parrot. To keep peace in the family, he decided to get rid of the feathered chatterbox. The next time he took a crate of chickens to town he also loaded the parrot on the wagon.

About half way there he heard his chickens squawking and the parrot screeching. Finally, he looked back and saw all the chickens walking in the road behind the wagon and the parrot marching back and forth on the tailboard, screaming in frustrated anger: "Any of you girls changed your minds yet?"

Thinking that it was a sergeant on the other end of the phone, the lieutenant bawled him out unmercifully.

"Do you know whom you are addressing?" was the icy reply.

"No," said the lieutenant.

"Well, this is Colonel Wallace."

"Colonel," said the lieutenant, "do you know whom you are addressing?"

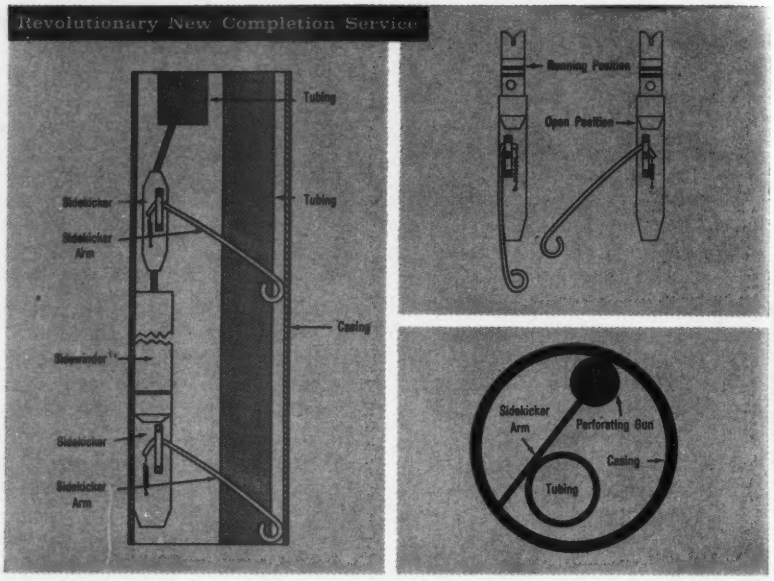
"NO," thundered the colonel.

"Thank God," said the lieutenant, and hung up.

The merchant mailed a bill for an overdue payment to a customer. To it he attached a note that read, "This bill is one year old." By return mail the merchant had his bill back. To it was attached another note: "Happy Birthday."

As one Hollywood kiddie put it to another: "I have had four daddies by my first mamma and three mamas by my fourth daddy."

Invoice — the voice Dad gets in family affairs.



Sidekicker Solves Dual PWC* Problems

*Permanent Well Completions

Welex engineers have answered the problem of perforating an upper zone with no risk to the adjacent tubing string in dual permanent well completions. The new development — another first by Welex — offers these advantages:

- Service can be performed through 2" tubing and standard seating nipples.
- The Sidekicker, a mechanical orienting decentralizer developed by Welex, forces the Sidewinder[1] perforating gun against the side of the casing, assuring maximum penetration.
- The Sidekicker positions jet gun so that the charges will fire outward through the casing — never in the direction of the adjacent tubing string.
- Sidewinder[1] retrievable carrier absorbs the shock of detonation, protecting adjacent tubing string from damage.
- Absolutely no debris is left in the hole. All debris is retained in the carrier and returned to the surface.

Welex, the company that originated jet perforating proudly adds this new service to the other "firsts" that it has introduced to the oil industry.

In Permanent Well Completions, as well as in other types of completions, Welex has a complete set of tools for every job. Next time and every time let Welex's completion services work for you.

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[1]Trademark of Jet Research Center, Inc.

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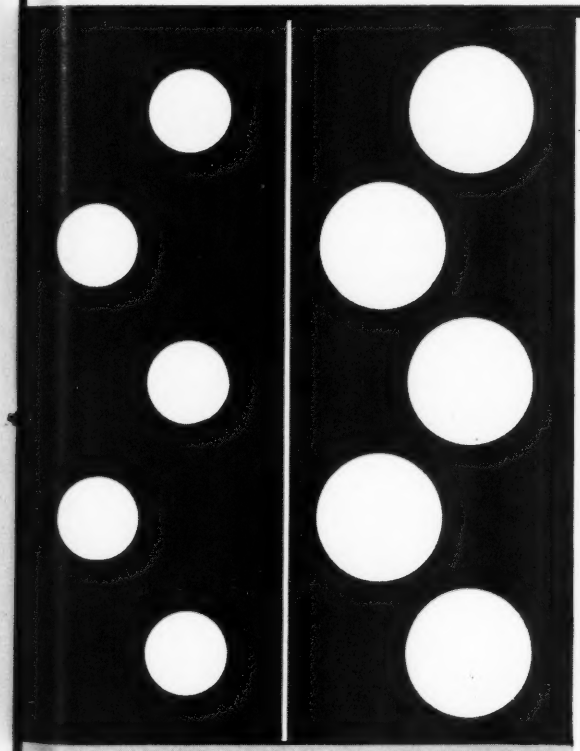

Comparison of area of standard perforations (above, left) and 780 Super E perforations (above, right).

You are looking at the actual size of perforations produced by Lane-Wells new 780 SUPER E BULLET Perforating. Compare these holes with the size of perforations produced by standard bullets—compare the hole size with even smaller holes by other types of perforating.

Designed especially to produce a large hole and maximum formation cracking, the 780 SUPER E BULLET really paves the way for hydraulic fracturing, explosive fracturing, acidizing, and other types of formation treatments. Because the 780 SUPER E BULLET is fired by a standard Lane-Wells Type E gun, you get all the advantages of selective firing and proved performance.

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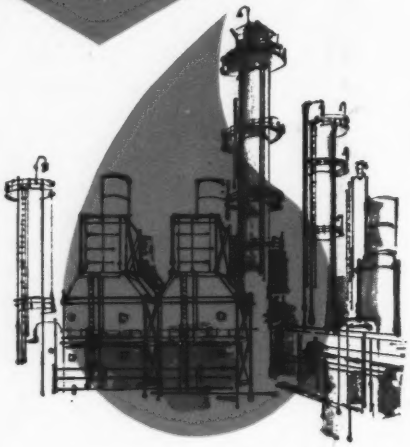

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